Submission re: Phase 2 Net Metering Consultation

1. Introduction and Background

The Canadian Solar Industries Association (CanSIA) is a national trade association that represents the solar energy industry throughout Canada. CanSIA's vision is for solar energy to be a mainstream energy source and an integral part of Canada's diversified energy mix by 2020. CanSIA also intends for the solar energy industry to be sustainable, with no direct subsidies, and operating in a supportive and stable policy and regulatory environment within a similar time frame. In working to accomplish this goal, CanSIA is pleased to make this submission to the Ontario Ministry of Energy on the phase 2 net metering consultations.

Ontario's Distributed Solar Generation (DSG) industry is at a crossroads. For the past 7 years the industry has largely focused on building Feed-in Tariff (FIT) and microFIT projects. Since the introduction of these programs Ontario has seen impressive growth in the amount of solar that has been connected to the electricity grid. In total, Ontario has reached over 2,100 MW of installed solar, with roughly another 600 MW in the pipeline.[1] These projects have put Ontario amongst the global leaders for total installed capacity, contributed to job creation, investment, and GHG emission reductions from the electricity sector as a whole.

The future for DSG in Ontario, however, is less than certain. The FIT and microFIT Programs are slated to end in 2018 and at that point the industry must shift its focus to net metering. The government of Ontario has already signaled their intention to transition the DSG industry in this direction, however, the framework for how the transition will work has not yet been finalized.

Ontario currently has a net metering regulation which allows customers to install solar PV and use the generation to offset their own electricity consumption. Net metering is currently available to renewable generation facilities with a nameplate capacity of 500 kW AC or less. Customers are only charged for the net electricity consumption between their total output and total gross consumption over the course of the billing period. Customers are still responsible for charges not calculated on the basis of the customer's energy consumption (ex., monthly fixed charges or peak demand based charges). Excess renewable generation greater than consumption in a month creates a credit for the customer that can be carried forward for up to a rolling 10 – 11 month period. After a positive credit balance has been carried for that period, any excess generation credit is reduced to zero and lost by the customer.

Consultation on a new net metering regulation occurred during the fall of 2016 with the new regulation slated to be released in 2017. This new regulation, however, has several pieces missing – pieces that are

[1] Independent Electricity System Operator, A Progress Report on Contracted Electricity Supply, http://www.ieso.ca/Documents/Supply/Progress-Report-Contracted-Supply-Q22016.pdf, Pg. 11, and Independent Electricity System Operator, Contracts Offered for FIT 4, http://fit.powerauthority.on.ca/newsroom/newsroom-2016/June-29-2016-Contracts-Offered-for-FIT-4.

necessary to implement if net metering is going to act as a viable new market for the DSG industry to reduce customer's electricity bills and reduce GHGs. As relayed previously through our Distributed Generation Task Force (DGTF)[2], CanSIA envisions a transition for the Ontario DSG industry to move away from the current microFIT and FIT regime and into a net metering based framework. This transition, and the resultant net metering framework, will be more responsive to electricity customer demand and shift more of the investment and performance risk to the market. Making this transition will allow the private sector to design and deliver projects efficiently within a timeline driven by economics and investment decisions rather than centralized procurement cycles.

The revised net metering regulation due out in 2017 is one of the central pillars to implementing this transition. The Ministry of Energy's Phase 1 changes represent an improvement on the existing regulation, however, additional modifications both to the regulation, as well as to other supporting systems and legislation, are required in order to establish a robust and successful net metering framework in Ontario that supports customer choice, is available to all ratepayers, and provides the ability to access net metering projects at a reasonable cost.

2. Questions

2.1 Third-Party Ownership

2.1.1 Will broadening the scope of Ontario's net metering program to include third-party ownership models provide net benefits to net metering customers?

Yes.

Third party ownership arrangements should be facilitated by the new net metering framework. As has been evidenced from experience under the microFIT Program in Ontario and in net metering based markets in the United States, third party ownership of systems and third party financing arrangements have resulted in larger amounts of development than direct ownership alone.

Allowing third party ownership and financing results in more options for customers deciding whether to adopt solar to lower their energy bills. This is done by facilitating leasing or power purchase agreement (PPA) arrangements for customers with lower access to capital, or, who do not want to take on the burden of operation and maintenance of the system.

Third-party ownership will also provide net metering customers with access to relatively predictable rates for electricity. A third-party can determine a rate (fixed or escalating) at the beginning of the contract term with the net metering customer that will last for the duration of the project lifetime. The

[2] CanSIA, Distributed Generation Task Force Recommendation Report, http://www.cansia.ca/uploads/7/2/5/1/72513707/cansia_dgtf_recommendation_report.pdf.

third-party can set this rate at a price that will recover the cost of the system, cover estimated operating cost and contribute to the margin of the business.

Third-party ownership will also help to ensure that net-metering customers are receiving a high quality system and that the system will continue to be maintained over its lifetime. The owner of the system needs to ensure that the system will remain operational for its lifetime in order for them to recover the cost of the system. The onus is on the owner to monitor their fleet of systems to confirm that they are operating as expect and provide expedient repairs to minimize down time.

Increasing consumer choice was identified as the top priority by participants of the OEB's 2015 Energy Leaders Sector Forum and encouraging consumer choice should be a priority for the net metering framework, as well.

2.1.2 Will broadening the scope of Ontario's net metering program to include third-party ownership models provide net benefits to Ontario's electricity system?

Third-party ownership models will increase the number of net metering systems that are installed within the province. Under the current regulations these systems are installed at a load that is equal to the generators annual production. This reduces the draw on Ontario's electricity system similar to conservation measures. In the case of solar, this generation is typically coincident with the electricity system's peak times. An increase in the adoption of net metering systems will reduce the need for centralized power plants to be procured and constructed on Ontario's electricity system as well as contribute to the possible deferral of future transmission and distribution infrastructure.

With the inclusion of third-party ownership, Local Distribution Companies would be allowed to own net-metering systems. This provides the LDCs with the opportunity to site net-metering systems in line with their regional plans. If there is a requirement for additional generation or reduction in consumption in a load centre, installation of a net-metering system provides an alternative to a wires or traditional CDM measures. As outlined in CanSIA's submission with regards to the Ontario Long Term Energy Plan[3], the province is likely to face a supply shortfall by 2020 or 2021; however, the magnitude and timing of such a shortfall is influenced by several factors that are difficult to forecast. By enabling rapid ramp-up of distributed energy resources, third-party ownership can benefit the system by allowing capacity to be added quickly and in amounts and locations that match demand.

Aggregators, LDCs and other third-parties will be provided the opportunity to operate their fleet of net-metering systems as a "virtual power plant" to provide grid support measures such a voltage/frequency regulation, VAR support, and capacity support. This will reduce the Ontario electricity system's

[3] CanSIA, The Role of Solar in Ontario's Long Term Energy Plan, http://www.cansia.ca/uploads/7/2/5/1/72513707/161216_-_cansia_submission_re_the_role_of_solar_in_ontarios_long_term_energy_plan_vf_20161216.pdf.

requirement for additional infrastructure to provide these traditional grid support features. As well these systems are rapidly deployable compared to traditional systems. Third-party ownership provides the opportunity for a "virtual power plant" operated by a single entity to be coordinated with system operators.

An increase in the deployment of net metering systems also reduces the need for utilizing natural gas generators to meet peak system demands which both reduces greenhouse gas (GHG) emissions from the electricity sector as well as reduces carbon price risk for ratepayers. CanSIA commissioned Power Advisory LLC to examine the potential GHG emission reductions from solar PV in Ontario and found that each kWh of solar generated in Ontario can be expected to offset roughly 0.43 kg of GHGs. Each kWh generated by solar PV and consumed by electricity customers will avoid a kWh of grid based electricity. Further, solar PV generation will often directly correlate to production when natural gas generation is used most. This is due to both natural gas generation and solar PV generating during peak times, when electricity demand and price are highest. The analysis conducted by Power Advisory has factored in Ontario's historical demand profile as well as the generation profiles of natural gas (and all other generation) and solar and what the GHG composition of a kWh from the grid would be based on the amount of natural gas being utilized to meet demand during those times.

2.1.3 How important is the outcome of any potential decisions to include or not include third-party ownership models under Ontario's net metering program to your organization/community/industry?

Very important.

With the FIT and microFIT Programs being phased out by the end of 2017, the distributed solar industry in Ontario is working towards sustainability under a net metering based framework. As aforementioned, the Phase 1 changes to the net metering framework that will come into effect in mid-2017 are positive and represent a solid step forward. The Phase 2 changes currently under consideration, however, are critical to ensuring that Ontario solar companies are able to continue to operate under a net metering framework. There are a number of new issues that arise for businesses when focusing on net metering projects rather than grid supply projects backed by long term PPAs. For example:

- Financing costs will tend to increase as the off-takers change from the province to electricity customers with less reliable credit; and
- The pool of customers could decrease if solar companies are forced only to market products towards customers that have the upfront capital required for the purchase of a solar system.

Under a net metering framework (when compared to the current FIT regime) the counterparty risk changes from Aa2 (Moody's) to customers without a rating, mostly of residential and commercial nature. A lender will now have to assess the individual counterparty risk, which is much more involved. Or, alternatively, the lender will have to group counterparties of similar risk into large numbers to take advantage of diversification and the fact that default rates with respect to essential services have

historically been low. Enabling third-party ownership of systems helps to lessen the impact of these issues as solar companies are able to own and manage assets internally as well as achieve economies of scale across a larger volume of customers which provides some risk hedging capability.

It is also noted that the continued operation of the cooperative power sector (i.e. energy co-ops) is entirely dependent on the Ministry of Energy facilitating third-party ownership modes under Ontario's net metering framework. In order to exist in their current form, the co-op is by necessity a different legal entity than its customers (energy off-takers) whether those off-takers are co-op members or otherwise. Similarly, third-party ownership is essential to any MEVNM framework – without third-party ownership, MEVNM will be un-implementable.

2.1.4 What impact to your organization/community/industry would you anticipate if third-party ownership models were to be included under Ontario's net metering program?

While CanSIA expects the result of including third-party ownership under Ontario's net metering program to be positive, we also view the incorporation of third-party ownership to be absolutely necessary for sustaining the distributed solar industry in Ontario in the face of the conclusion of the FIT and microFIT programs. The industry must be able to expand the types of solutions it can offer to customers and evolve its value proposition to assist in helping them meet and manage their energy needs.

Please also see response to question 2.1.3.

2.1.5 What potential issues or challenges could arise with the inclusion of third-party ownership models under Ontario's net metering program?

Potential issues or challenges that could arise with the inclusion of third-party ownership models under Ontario's net metering program could include:

- Consumer protection issues;
- LDC/customer/third-party relationships; and
- LDCs instituting undue barriers for third parties with regards to connection costs and processes.

Consumer Protection Issues

In order to address these issues (and potential future issues) CanSIA has created our Solar Business Code of Conduct (SBCC).The SBCC establishes strong mechanisms for consumer protection and promotes transparency within the Canadian solar industry by providing consumers with clear standards and principles to which they can refer. The SBCC covers off items such as marketing practices, contractual arrangements, and compliance with agency and LDC processes. All of CanSIA's consumer protection materials, including guides for customers and our complaint resolution process, are available at http://www.cansia.ca/consumer-protection.html.

LDC/Customer/Third-Party Relationships

Currently, under the microFIT Program, there are different ways of facilitating relationships between LDCs, load customers, and any involved third-parties. For example, some LDCs permit third-parties to communicate with LDCs for the purposes of requesting and securing connection or submitting paperwork (provided the customer has given them permission to do so), and others do not. Under a third-party ownership net metering framework it would be necessary to clarify what actions a third-party is permitted to take on behalf of customers and what permissions are required before those actions can be taken. In order to help ensure that actions are taken promptly and information is exchanged accurately, it makes sense to allow third-parties to communicate with LDCs directly concerning the load customer they would be serving including to: request connection assessments, schedule connection site visits, provide information about the site/customer to the LDC, and to sign net metering agreements.

LDCs Instituting Barriers

LDCs, especially those that wish to act as generators under a third-party ownership arrangement with customers, can act beyond the realm of review and they write the rules of engagement on grid connections to facilitate or not facilitate the implementation and penetration of renewable energy.

Often a load customer who wishes to self-generate has no ability to challenge the connection costs required by grid operators in advance, nor to review and challenge invoices that are sent post completion of the work. There is also little opportunity to insert non-utility suppliers in replacement of the internal work force designated by the grid utility to undertake grid connection work.

2.1.6 What specific policy objectives or program design issues are important to your organization/community/industry in considering how third-party ownership models could be enabled or restricted under Ontario's net metering program?

The specific policy objectives that should be prioritized in considering how third-party ownership models could be enabled or restricted under Ontario's net metering program include:

- Enabling a high degree of customer choice;
- Focusing on delivering solar at a low cost to customers;
- Encouraging an array of different business models; and
- Simplicity/ease of adoption

Even with the inclusion of third-party ownership within the net metering framework, the resulting regulatory approach should be kept as simple and straightforward as possible to ensure that adoption does not become overly burdensome or complicated. The inclusion of third-party ownership should not affect the simplicity of the standard net-metering agreements.

2.1.7 Are there specific costs your organization/community/industry would incur if third-party ownership models for net metering were to be made eligible under Ontario's net metering framework?

There are not likely specific costs that would be incurred for CanSIA's members if third-party ownership models for metering were to be made eligible under Ontario's net metering framework. Certainly there would be legal and business structuring costs to revise operations and relationships with customers from how they have been structured under the microFIT Program, however, these costs would be manageable and viewed as a positive if it allowed companies to own solar systems and provide electricity to customers (and potentially other services to LDCs and the IESO).

While not quantifiable at this time, there are also potentially cost savings that will materialize from moving to net metering vis a vis the current FIT and microFIT process. In order to help ensure that administrative barriers are not created and associated increases in costs not incurred, it will be crucial to ensure that any expansions of the net metering framework do not complicate the currently simple net metering process for customers who want to develop and own a standalone net metering system.

2.2 Virtual Net Metering

Please note that for the purposes of this submission, MEVNM is used to describe a situation wherein the generator is a different entity than the customer regardless of whether the generator is creating net metering credits for use against a single customer's bill, or against multiple customer's bills.

2.2.1 Will broadening the scope of Ontario's net metering program to include virtual net metering models provide net benefits to net metered customers?

Yes.

MEVNM allows the sharing of credits generated by the output of a solar system to be allocated to other electricity customers based on percentage of ownership or of subscriptions. It offers a way for those who cannot, or do not want to, install solar panels on their own properties to participate in a solar project and receive the associated bill reduction benefits. MEVNM also allows the customers and the solar industry to capture the benefits of economies of scale by building larger systems. This allows for measurable reductions in install costs and thus creates greater savings and shorter payback periods for net metered customers and generators.

SEVNM provides benefits to net metered customers by allowing solar systems to be constructed where they make the most sense from a generation perspective (i.e. where the roof/property is of sufficient

size to host the system, where connection capability is best, where capacity factors are highest etc.) and for the generated net metering credits to be consumed where it makes the most sense (i.e. where there is the greatest bill savings based on rate class).

2.2.2 Will broadening the scope of Ontario's net metering program to include virtual net metering models provide net benefits to Ontario's electricity system and to all electricity ratepayers?

Please see CanSIA's response to question 2.1.2.

2.2.3 How important is the outcome of any potential decisions to include or not include virtual net metering models under Ontario's net metering program to your organization/community/industry?

Very Important.

With the FIT and microFIT Programs being phased out by the end of 2017, the distributed solar industry in Ontario is working towards sustainability under a net metering based framework. As aforementioned, the Phase 1 changes to the net metering framework that will come into effect in mid-2017 are positive and represent a solid step forward. The Phase 2 changes currently under consideration, however, are critical to ensuring that Ontario solar companies are able to continue to operate under a net metering framework. There are a number of new issues that arise for businesses when focusing on net metering projects rather than grid supply projects backed by long term PPAs. For example:

- The risk of stranded assets increase as the project's revenue stream is tied directly to a load customer's electricity use (which can decrease over time, or be completely eliminated if the customer leaves the property);
- Revenue streams can shift over time (all things being equal) as electricity customer rates change (e.g. changes in actual rates, changes in regulatory approaches to rate setting, or, government intervention).

In addition to the economies of scale that are created through a virtual net metering framework (as described in CanSIA's response to question 2.2.1, above), virtual net metering also has the benefit of providing a backstop against the loss of a load customer by permitting the generator to sign-up a new load customer to transfer excess generation credits to. In the event that a customer's load decreases, or, for example, a business closed down, the generator could then find a new customer to buy the excess generation credits. This provides a risk hedge for the generator which will assist in any financing arrangements with lenders by providing more certainty that the asset will not be stranded in the event of the loss of a load customer. This can further reduce the cost of the system and the electricity generated by reducing financing costs.

Further, many of the companies that currently participate in the FIT Program in Ontario have developed expertise with building larger scales of systems than would be common under residential net metering. MEVNM provides a more appropriate vehicle for these companies to leverage their expertise and build larger scale systems to serve multiple net metering customers simultaneously. MEVNM would also better allow these companies to raise project debt at favourable terms. Project debt (i.e., debt without recourse) is only available for projects of a critical mass – typically projects that require debt of more than $10-20 million; in some cases, project debt is available, starting as low as $1 million.

2.2.4 What impact to your organization/community/industry would you anticipate if virtual net metering models were to be included under Ontario's net metering program?

Very positive.

While CanSIA expects the result of including virtual net metering under Ontario's net metering program to be positive, we also view the incorporation of both SEVNM and MEVNM to be absolutely necessary for sustaining the distributed solar industry in Ontario in the face of the conclusion of the FIT and microFIT programs. The industry must be able to expand the types of solutions it can offer to customers and evolve its value proposition to assist in helping them meet and manage their energy needs.

2.2.5 What potential issues or challenges could arise with the inclusion of virtual net metering models under Ontario's net metering program?

Potential issues or challenges that could arise with the inclusion of virtual net metering models under Ontario's net metering program could include:

- Consumer protection issues;
- LDC/customer/third-party relationships;
- Upgrades to LDC IT and billing infrastructure; and
- LDCs instituting undue barriers for third parties with regards to connection costs and processes.

Upgrades to LDC IT and Billing Infrastructure

In order to implement either SEVNM or MEVNM, LDCs will very likely be required to make upgrades (or changes) to their IT and billing systems and infrastructure. These upgrades may carry an increase in costs for the LDCs which they would need to given permission to recover by the OEB.

Please also see CanSIA's response to question 2.1.5.

2.2.6 What specific policy objectives or program design issues are important to your organization/community/industry in considering how virtual net metering models could be enabled or restricted under Ontario's net metering program?

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The specific policy objectives that should be prioritized in considering how virtual net metering models could be enabled or restricted under Ontario's net metering program include:

- Enabling a high degree of customer choice;
- Focusing on delivering solar at a low cost to customers; and
- Encouraging an array of different business models.

2.2.7 Are there specific eligibility requirements and technical or administrative restrictions that should be contemplated for SEVNM (e.g. locational restrictions for virtual account crediting, treatment of different rate classes for billing administration, and specific compensation terms or charges)?

In keeping with the policy priorities identified above:

- Enabling a high degree of customer choice;
- Focusing on delivering solar at a low cost to customers; and
- Encouraging an array of different business models,

CanSIA strongly recommends not instituting technical or administrative restrictions such as a distance based restriction for meter eligibility under the net metering framework.

Meter Eligibility

Permitting community net metering arrangements would help make the new net metering regulation more permissible for new and different business models. Allowing new business models, and associated economies of scale, is important given the economic gap between the revenue requirement of solar systems and the available revenue from net metering that CanSIA's DGTF has forecasted in our past Recommendations Report. This economic gap is further exacerbated by the Ontario Energy Board's (OEB) decision to fix distribution system related charges on residential bills (an approach to these charges that the OEB may replicate for commercial and industrial customers at the conclusion of their EB 2015-0043 process).

The already challenging economics of net metering requires the solar industry to deliver solutions that drive greater efficiencies including improved economies of scale. A framework that permits a broader pool of eligible load accounts permits this cost saving model to lower project development costs (which can also be passed down to customers). Community net metering (as well as virtual net metering) should thus allow the generator to generate credits for any customer located within the same LDC service territory as the generator. Ruling out the ability of a net metering generator to pass on savings to the accounts billed by the same LDC would severely limit the feasibility of a virtual net metering business case/value proposition.

In terms of an effective policy for implementation and customer participation, the number of potential clients that would have meters within a small area (such as the 3 km restriction proposed by the Ministry of Energy for single entity virtual net metering) would be lower than ones that have meters anywhere within the same LDC service territory. There is a strong possibility that this type of limitation could render community net metering and single entity virtual net metering impractical for the majority of clients who are most likely to invest in and benefit from these frameworks, particularly for the corporate clients that are making sustainability a key corporate objective or that wish to take advantage of incentives arising from the CCAP.

CanSIA recommends allowing community net metering and virtual net metering to occur between two or more eligible meters anywhere within a Local Distribution Company's (LDC) service territory. This treatment has significant precedent in the United States for both virtual net metering and community net metering regulations/programs. For example, programs in Washington, Massachusetts, Colorado, Minnesota, New York, California, Maine, Vermont all allow eligible meters to virtual or community net meter provided those meters are located within the same utility service territory. These programs do not further restrict meter eligibility based on location or distance. A larger pool of eligibility also allows more customers to access net metering projects and creates a more level playing field amongst customers that have facilities that are more ideally configured for the installation of solar and those that do not.

Settlement Provisions

Within virtual net metering each of the different customers that are participating with a particular project should have the ability to be settled based on the rate class of their load account (i.e. the load account receiving the credits) rather than based on the rate class of the account where the generation is occurring, or the wholesale rate. For example, under a SEVNM framework, if a company owns a warehouse and generates electricity there, that warehouse might pay the Industry Rate Class A but its store location, where the credits are being transferred, might pay a higher electricity rate. The net metering customer should have the generation credited based on the rate class of the account receiving the credit. Under a MEVNM framework, a kWh generated by the system should translate into a credit at the retail rate for the customer's load account where the credit is being utilized.

Another issue that needs to be handled carefully is the distinction between the marketing of net metering credits and that of retail electricity. Retailers of electricity charge only the commodity rate, in which case Global Adjustment is added to the bill. Virtual net metering, on the other hand, is a replication of on-site net metering, in which case the power produced is treated as self-consumed and therefore no Global Adjustment applies. Any organization who is marketing virtual net metering credits to households and businesses should therefore not be expected to add Global Adjustment to the price of the credits.

2.2.8 What kinds of MEVNM ownership models should be contemplated by Ontario's net metering framework (e.g. utility, private developer, not-for-profit, co-operative, Indigenous community or municipally-owned)?

In keeping with the policy priorities identified above:

- Enabling a high degree of customer choice;
- Focusing on delivering solar at a low cost to customers; and
- Encouraging an array of different business models,

CanSIA strongly recommends not precluding different ownership models under the net metering framework. Experience in the U.S. has illustrated that programs restricted to utilities or community groups (as organizers, developers and owners of projects) result in small numbers of projects constructed (often 1~2 per state) and far higher costs to customers. Such a result does not provide the benefits that VNM can deliver to the system, customers or the industry.

In contrast, programs such as those in New York, Massachusetts, Minnesota and Colorado which have opened up participation to a full range of public and private entities have garnered robust response, attractive pricing, and material amounts of development. Managing that response by implementing clear project-maturity rules that will prevent an oversaturated queue, and involving utilities early in defining attractive locations for adding capacity, will also minimize wasted cost and effort and make the program work best for all stakeholders.

2.2.9 What kinds of physical configurations should be contemplated under Ontario's net metering framework for MEVNM (e.g. condominiums, apartments, neighbourhood co-operatives, municipal buildings, university or corporate campuses)?

In keeping with the policy priorities identified above:

- Enabling a high degree of customer choice;
- Focusing on delivering solar at a low cost to customers; and
- Encouraging an array of different business models,

CanSIA strongly recommends not precluding different physical configurations under the net metering framework. Certain physical configurations (such as those identified in the question) lend themselves well to on-site MEVNM as the off-takers of the net metering credits would be located in relatively close proximity to the point of generation. In order to capture certain benefits provided by a robust MEVNM framework, however, the point of generation should be off-site from the off-takers. For example, in order to permit customers with sites (buildings/properties) that are inappropriate for hosting solar due to shading, size, structural limitations or otherwise, off-site generation provides the only available option if they are to offset their bills with net metered solar generation.

2.2.10 Are there specific costs your organization/community/industry would incur if virtual net metering models were to be required of LDCs under Ontario's net metering framework?

While there would be legal and business structuring costs to revise operations and relationships with customers from how they have been structured under the microFIT Program, these costs would be manageable and viewed as a positive if it allowed companies to own solar systems and provide electricity to customers (and potentially other services to LDCs and the IESO).

There are also potentially other regulatory charges that would be levied on generators under a MEVNM framework including:

- Wheeling;
- Delivery;
- Metering; and
- Potentially other service/settlement charges.

2.3 Additional Feedback

2.3.1 Please provide other topics or issues related to third-party ownership and virtual net metering that you would like to bring to the attention of the Ministry of Energy, explaining why are important to consider.

Regulatory Barrier

It is noted that Section 7(1)(a) of the net metering regulation would likely require modification if the Ministry of Energy incorporates third party ownership and virtual net metering into the net metering regulation. This section currently specifies that the generator must generate electricity primarily for their own use. In a third party ownership or virtual net metering framework, the generator would be a different entity than the associated load account and the generator would be generating electricity primarily for use by others.

Time of Use Rates

One of the largest barriers to net metering project uptake from a financing and system economics perspective is transitioning the current use of tiered rates for net metered customers to Time of Use (TOU) rates.

Currently if a load customer installs a net metering system they are required to move to tiered rates for both their electricity use as well as for the calculation of credits for exported generation. This is largely due to IT infrastructure issues between the IESO's Meter Data Management and Repository (MDMR) system, smart meters, and LDCs data input and billing systems. Tiered rates do not account for the difference in value between on-peak, mid-peak, and off-peak electricity. Under TOU, the higher price

periods tend to align with the production curves of solar generation. Evolution of the TOU structure in the future is also likely to see a larger separation between the on-peak and off-peak price, which would benefit solar generation. The possible inclusion of a fourth time period for critical peaks (i.e., 1 or 2 hours a day during the summer price period) would further enhance the value of solar generation. The fixed price periods of TOU also allows for strong predictability of the benefits of solar generation for customers.

Using tiered rates for the calculation of consumed electricity and excess generation undervalues the generation of a solar system and lowers the revenue available to system owners due to that undervaluation. This undervaluation can be between 7 – 23% depending on the electricity demand of the net metering customer (ex. Whether the majority of their consumption falls within tier 1 rates or tier 2 rates).

Making the necessary IT and billing structure investments to allow the LDCs to settle net metered customers at TOU rates will:

- Accurately value generation and consumption of the customer in the period in which it materializes;
- Encourage net metering and thus encourage electricity generation close to load which allows LDCs to reduce distributions system costs over time;
- Encourage electricity generation close to load which should allow ratepayers to reduce impacts of line losses on their bill;
- Encourage electricity generation close to load which should allow LDCs to reduce transmission and distribution expenditures, going forward;
- Encourage net metering customers to respond to price signals based on the cost of peak energy;
- As net metering continues to expand in Ontario, switching to TOU rates makes use of the investment that the province has already made in smart meters, rather than reversing it, for this group of customers (which is expected to grow over time).

If net metering is to serve as a viable regulatory framework for the distributed solar industry and electricity customers, access to TOU rates for net metering customers is absolutely essential.

Connection Thresholds

In Ontario, distributed solar is subject to limits on the amount of generation that can be connected on a given feeder. While these limits can differ across LDCs, most LDCs tend to use Hydro One Networks Inc.'s (HONI) limits which are:

- 7% of peak load on a single phase feeder (F class feeder); and
- 10% of peak load on a three phase feeder (M class feeder).

These threshold limits not only present a significant difficulty for the distributed solar industry by limiting the total market size, they also jeopardize the government's long term net zero home strategy. As outlined within the CCAP, the government of Ontario intends to move new construction towards being net zero between now and 2030.

A net zero energy building is defined as a building that produces as much energy as it consumes over the course of a year. These buildings achieve net zero energy status first through high levels of energy efficiency, and then through the addition of clean, on-site renewable power generation, typically solar PV.[4] From a sustainable development perspective, ensuring as much future building and community development as possible achieves net zero energy status should be one of the most important focuses of governments operating in a carbon constrained environment. In Ontario, approximately 17% of total GHG emissions come from buildings and 9% come from the electricity sector.[5] A building's emissions profile is largely made up of fossil fuel use for heating (space and water), and electricity use that can come from fossil fuel sources (the percentage of which changes depending on the time of day and how much generation is sourced from the natural gas fleet). Additional deployment of solar technology can reduce emissions from both sources.

The threshold limits imposed by HONI and other LDCs, however, will severely limit the extent to which buildings can achieve net zero status through the use of solar PV by constraining the amount of solar PV that can be connected on a given feeder. These limits also limit the potential size of a net metering market by constraining the number of customers that can implement solar in a given area.

Connection Costs

There is currently different treatment by LDCs in Ontario as to the necessity of, and payment responsibility for, various different connection requirements for DSG. For example, some LDCs will require the inclusion of Supervisory Control and Data Acquisition (SCADA) or transfer trip equipment for certain sizes of DSG projects. The sizes that trigger the need for SCADA and transfer trip differ across LDCs as does the LDC's opinion on which entity must bear the cost of the cost of installing the equipment.

The OEB has given high level guidance on the payment responsibility for items such as SCADA and transfer trip within the Distribution System Code (DSC) in Section 3.3.2 on renewable enabling improvements. Renewable enabling improvements are intended to be cost recoverable through the rate base rather than from generators. This section of the DSC specifies that renewable enabling

[4] California Public Utilities Commission, http://www.californiaznehomes.com/#!faq/cirw.
[5] Ministry of the Environment and Climate Change, Climate Strategy, https://dr6j45jk9xcmk.cloudfront.net/documents/4928/climate-change-strategy-en.pdf, pg. 25.

improvements to the main distribution system to accommodate the connection of renewable energy generation facilities include both the provision of protection against islanding (transfer trip or equivalent) and SCADA system design, construction and connection.

These and other connection requirements provide an opportunity for collaborative action between LDCs and the OEB to clarify existing regulatory frameworks as well as investigate potential alternatives to certain connection requirements in order to maintain safety and reliability while reducing the cost of installing solar. Addressing these cost barriers will be crucial to the success of any expanded net metering framework.

Opportunity Zones

Similar to the process in New York State, the Ministry of Energy and OEB should work with LDCs to identify opportunity zones within their service territory where solar generation would provide them with the best value. The opportunity zones could be aligned with all net metering projects (community, virtual, standard) to provide the maximum value for customers who want to adopt solar. These opportunity zones could also be aligned with the IESO's Regional Planning Process as a way to utilize DSG to meet future supply needs as an alternative to poles/wires solutions.

Distributed Energy Resource Credits

The OEB is currently considering the implementation of Distributed Energy Resource (DER) credits as a part of their consultation on rate design changes for commercial/industrial electricity customers. The fast switching capability of solar generation to react to disturbances in the electricity grid through their inverter connection allows DSG to provide a variety of services to distribution networks. Receiving DER credits would increase the adoption of solar generation by capturing revenue streams beyond simply avoided electricity consumption thereby reducing barriers to adoption.

With the OEB considering DER credits as a part of rate design changes for distribution customers, the new net metering regime should consider how to provide compensation for DER credits, if they are implemented. One option to consider would be to set a fixed rate (either per connection or for excess energy) to reflect the DER credit value. The fixed rate could be set and changed as part of the rate filing of the LDC.

Regional Planning

There are a number of drawbacks with the current approach to regional planning as it relates to opportunities for solar generation. Solar generation uptake to meet regional needs, along with other types of DERs, are only considered in regional planning as part of broader central procurement initiatives (ex. FIT, CHP, etc.) overseen by the IESO. By considering only the uptake of solar generation in a specific region through a central procurement, regional planning is not providing a full analysis of the uptake potential nor of innovative solutions that could be proposed to meet a regional need. This partial assessment of uptake potential for solar generation reduces the perceived capability of solar generation

to address potential system needs. To adequately understand the ability for DSG to meet system needs, a specific regional assessment of DSG including a potential regional procurement (or DER credit offering) should be considered. A regional assessment could determine what solar generation projects may be available for development and how well the location of those projects matches with the current connection capability in a distribution or transmission network.

Additionally, regional planning has in recent past only considered the peak capacity contribution of solar generation. There are a number of other benefits (e.g. reactive power compensation, regulation services etc.) that solar generation can provide to power systems (if utilizing the necessary inverter and control technologies) that should be considered as a part of the IRRP. By limiting the comparison of solar generation solutions to other options (ex. Traditional wires options) primarily to meet peak demand needs, solar generation is not able to leverage its full value to the power system.